

# Efficacy of Information and Communication Technology in Enhancing Learning Outcomes of Students with Hearing Impairment in Ibadan

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## ABSTRACT

The study aimed at examining the efficacy of Information and Communication Technology (ICT) in enhancing learning outcomes of students with hearing impairment in Ibadan. The study adopted a pretest, post-test, control group quasi-experimental research design. Purposive sampling techniques was used for the selection of thirty participants comprising of (15 males and 15 females) used for the study. The instrument used in carrying out the study was Economics Achievement Test (EAT) with reliability coefficient of 0.72. Analysis of covariance (ANCOVA) was used to analyse the null hypothesis generated and tested at 0.05 level of significance. The result showed that there is a significant main effect of ICT on the participants' learning outcomes in economics. Based on the findings of the study, it was recommended among others that teachers should utilize ICT during teaching learning process in the classroom and also go for in-service training to update their knowledge on the best way of handling ICT facilities to impact knowledge.

**Keywords:** Information, communication, technology, hearing impairment, learning outcomes.

## INTRODUCTION

Education has been described as the best legacy a country can give to her citizens. Obani (2006) observed that education improves the development of any society, and the youths who occupy significant positions in that country should be properly educated in order to improve the society. Therefore, schools at various levels are expected to educate future leaders and develop the high level capacities needed for economic growth and development. Igbuzor (2006) while stressing the importance of education noted that education is a human right that should be accorded to all human beings solely by reasons of being human. The right to education is universal to all including those with hearing impairment.

Hearing provides a basis for almost all kinds of learning. From the time a child is born, he/she is at least, after some weeks expected to respond to sound stimuli. This becomes possible if one's auditory systems are perfectly developed. Right at a tender age, students with good auditory perception are able to respond to voices of parents as well as identify them using auditory discrimination (Ejim, 2015). According to Agomoh and Kanu (2011) Ability to communicate and interact in one's environment largely depends on hearing. Loss of hearing ability, if occurs before or after birth can create difficulties in the person's communication, adjustment and learning.

Students with hearing impairment have at one point or the other in their lives, lost the ability to perceive sounds and use oral language for the purpose of communication. Hearing impairment covers all forms of hearing problems that impedes communication. It could be mild or severe. So, persons with hearing impairment are people who have mild or severe hearing problems to the extent that communication is affected. Citing the definition of the Committee of Nomenclature of the Conference of Executives of American Schools for the Deaf, Abebe (2008) defined persons with hearing impairment as those in whom the sense of hearing is non-functional for the ordinary purpose of life or those of whom impute sound is meaningless for communicational purpose.

According to Baker (2006), hearing loss has a continual impact on daily learning experience. For many children, some form of special education services is required in order for the child who is hearing impaired to receive and appropriate education. Many students with hearing impairment require the knowledge and utilization of Information and Communication Technology (ICT) to participate in, and benefit from educational programmes.

A range of technology solutions are available to support student performance, achievement and independence in the aids to daily living. Students who have access to appropriate information and communication technology solution that they need are more likely to be successful in their educational programs (Masson, 2000).

UNESCO (2002) described ICT as the range of technologies that are applied in the process of collecting, storing, editing, retrieving and transfer of information in various forms. Information and communication technology (ICT) is an umbrella term that includes all technologies for manipulation, ICT encompasses any medium to record information technology for broadcasting information – radio, television and technology for communicating through voice and sound or images, microphones, camera, loudspeaker,

Salaudeen (2015) ICT assist the people with hearing impairment, by providing them aid to learning capacities and also increase their learning potential. ICT makes the children with hearing impairment proficient by providing them with the ability to access knowledge with the help of suitable digital media. It also plays a very important role in helping the children with hearing impairment communicate with peers, thereby promoting collaborative and social learning environment. ICT also helps students in reading and writing through the hearing and seeing processes (Lasa, 2010). The world today is experiencing dramatic changes brought about by the use of information and communication technology, especially computers. The knowledge and skills which schools are required to impact to their students at present have to reflect the growing use of computers and information technology and the ability to source information easily from all parts of the world via the internet. The internet is a major part of current and future growth of Information Technology (Uwoye 2001). The internet is a wide-world network of millions of computers linked together by telephone lines worldwide. It is a means of transmitting and communicating information to every part of the world. The internet is emerging as a evolutionary force aspect of our lives of which the educational sector is not left out.

Teaching and learning through internet usage help teachers to get variety of latest information in special education. internet facilities are learning resources in which teachers can use to facilitate learning. Internet usage enhances learning by helping in curriculum adaptation to meet the unique needs of learners with special needs. It provides an array of powerful tools that help in transforming the present isolated teacher-present isolated teacher – centered and text bound classroom into rich, student focused and interactive learning environments. To effectively meet these expected results in schools, teachers must embrace the new technological learning tools (Handel & Harold, 2006; Jegbefume, 2013).

Therefore, the paper examined the efficacy of ICT in enhancing learning outcomes.

## STATEMENT OF THE PROBLEM

Education has become a right for all children including those with hearing impairments. The knowledge and skills which schools are required to impact to their students at present have to reflect the growing use of computers and information technology and the ability to source information easily from all parts of the world via the internet. However, teaching strategies and approaches employed by teachers during lessons are mainly traditional or passive types, they are approaches which are commonly used in schools to convey instruction (Komolafe and Orebanjo, 2002). The longer the students with hearing impairment are required to struggle with the inadequacies of these approaches that is, traditional approaches in facilitating the acquisition of knowledge and understanding, the more likely they are to become frustrated, discouraged and disengaged from the academic experience, with the resultant effect of poor performance. It is against this background that this study is designed to examine the efficacy of ICT on learning outcomes of students with hearing impairment.

The study examined the efficacy of Information and Communication Technology (ICT) on learning outcomes of students with hearing impairment in selected secondary schools in Ibadan.

## SIGNIFICANCE OF THE STUDY

Based on the findings of this study, it is hoped that the teachers would be able to select appropriate ICT that could be used to teach the students with hearing impairment. The learners too would be acquainted with the resources that can enhance their learning outcomes.

Findings of this study will also go a long way to help the parents the school administrators, curriculum planners, policy makers and all stakeholders to know the type of information and communication technology resources to be made available in our secondary schools in order to facilitate better and faster teaching and learning process.

## Hypothesis

The null hypothesis was tested at 0.05 level of significance. There is no significance main effect of Information and Communication Technology (ICT) and control group on learning outcomes of participants.

## METHODOLOGY

The study adopted a pre-test, post-test, control group quasi experimental research design. The target population for the study comprised all students with hearing impairment in senior secondary school two in Ibadan, Oyo State. Purposive sampling techniques was used for the selection of fifteen males and fifteen females.

The instrument used in carrying out this study was Economics Achievement Test (EAT) with reliability coefficient of 0.72 covariance (ANCOVA) was used to analyse the null hypothesis generated and tested at 0.05 level of significant.

Test administration was conducted towards the end of session, a period when regular classes in all public schools had been concluded; this provided the researchers the opportunity to carry out the treatment during normal class period. The treatment lasted for eight weeks out of which two weeks were used for pre and post treatment assessments. Participants were exposed to treatment for six weeks, using interact. During the six weeks, participants in the experimental group received training for 3 hours per week. The duration of each lesson was 40 minutes. Participants in the control group was taught with conventional method.

## RESULTS

**Table 1: Analysis of covariance (ANCOVA) of participants in treatment and control groups**

Source of variation	Sum of square (SS)	Df	Mean square (Ms)	F	P
Covariates	1278.816	1	1278.816	113.48*	<0.05
Treatment	144.700	1	72.3500	6.42*	<0.05
Model	1575.567	6	262.594	23.30*	<0.05
Residual	597.283	23	11.269		
Total	2172	29			

Significant at P <0.05

Table 1 shows that there is a significant main effect of treatment participants' learning outcomes in economics (F=6.42, P <0.05). This indicates that the treatment had significant effect on the learning outcomes mean scores of participants in all the groups used for the study. On the basis of this finding, the null hypothesis was therefore rejected.

The result of the null hypothesis is further shown in table 2 using the multiple classification analysis.

**Table 2: Multiple classification analysis of post-test scores according to experimental and the control groups**

Grand mean = 39.567 variable + category	N	Unadjusted Dev'n Eta	Adjusted for independents + covariates Dev'n Beta
Treatment group			
1. ICT	15	3.73	3.75
2. Conventional	15	-41.27 -70	-4.47
Multiple R Squared multiple R			.72 .583 .763

The adjusted scores show that the ICT group scored higher, followed by the conventional group.

**Table 3: Mean and standard deviation scores of the ICT and control groups**

Treatment	Mean	S.D	N
ICT	43.30	4.73	15
Control Group	35.30	2.79	15

Table 3: Shows that participants exposed to ICT had the highest mean score of (43.30) and was followed by the control group (35.30) respectively. This indicates that ICT was effective than the conventional method in enhancing learning outcomes in the participants.

## DISCUSSION

This result is consistent with the findings of Boniface, 2013 and Dike, 2015 and Okwoche, 2015) which showed that there is a positive correlation between the use of ICT and academic performance of students with hearing impairment in school subjects. Trans (2009) found a significant impact on student attitude towards internet as it improves their knowledge as a result of accurate instructional delivery.

## CONCLUSION

The study examined the efficacy of ICT in enhancing learning outcomes of students with hearing impairment. Special educators in secondary schools should come to understand their unique role in the use of information and communication technology (ICT) in enhancing teaching learning.

It should be borne in mind that when ICT is being used adequately and appropriately by the teachers and the students also pay attention on the class, learning outcomes is bound to be enhanced.

## RECOMMENDATIONS

In view of the findings of this study the following recommendations are made.

Firstly, teachers should use ICT with appropriate teaching methods that will bring about active involvement and learning of the students.

Also, the students should pay rapt attention and get acquainted with the use of ICT while they are being used by their teachers to impart knowledge.

Government, school administrators, parents, NGO's and philanthropists are enjoined to contribute their own quota by providing the ICT facilities in the school and at home to aid their utilization.

In-service training, workshops, seminars and conferences on the utilization of ICT should be organized from time to time to update the knowledge of teachers in our schools.

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